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CLAIMS

[Claim(s)]
[Claim 1] It is the data distribution control approach which distributes data from a server computer to the application program which works on two or more client computers. As opposed to the data distribution demand to a server computer from each client computer In a server computer, check processing of the user of the client computer of a requiring agency is performed. When it corresponds to the user registered beforehand, the client computer of the user concerned is specified. Data are distributed only to the specified client computer. After distribution termination, coincidence or the time difference set up beforehand is attached to each client computer. Or the data distribution control approach characterized by making the received data transmit to an application program after checking having transmitted the notice of distribution termination and having received said notice of distribution termination in each client computer in the sequence set up beforehand.
[Claim 2] It is the data distribution system which distributes data to the application program which consists of a server computer and two or more client computers, and works on two or more client computers from a server computer. A check processing means to check whether said server computer is the user by whom the user of the client computer of data distribution demand origin is registered beforehand, When it corresponds to the user registered beforehand, the client computer of the user concerned is specified. Data are distributed only to the specified client computer. It has a message distribution processing means to transmit the notice of distribution termination to coincidence to each client computer after distribution termination. The data distribution system characterized by equipping it with a means to transmit the received data to an application program after said client computer checks having received said notice of distribution termination.
[Claim 3] It is the data distribution system which distributes data to the application program which consists of a server computer and two or more client computers, and works on two or more client computers from a server computer. A check processing means to check whether said server computer is the user by whom the user of the client computer of data distribution demand origin is registered beforehand, When it corresponds to the user registered beforehand, the client computer of the user concerned is specified. Data are distributed only to the specified client computer. It has a message distribution processing means to attach the time difference beforehand set up to each client computer after distribution termination, and to transmit the notice of distribution termination. The data distribution system characterized by equipping it with a means to transmit the received data to an application program after said client computer checks having received said notice of distribution termination.
[Claim 4] It is the data distribution system which distributes data to the application program which consists of a server computer and two or more client computers, and works on two or more client computers from a server computer. A check processing means to check whether said server computer is the user by whom the user of the client computer of data distribution demand origin is registered beforehand, When it corresponds to the user registered beforehand, the client computer of the user concerned is specified. Data are distributed only to the specified client computer. It has a message distribution processing means to transmit the notice of distribution termination in the sequence

beforehand set up to each client computer after distribution termination. The data distribution system characterized by equipping it with a means to transmit the received data to an application program after said client computer checks having received said notice of distribution termination.

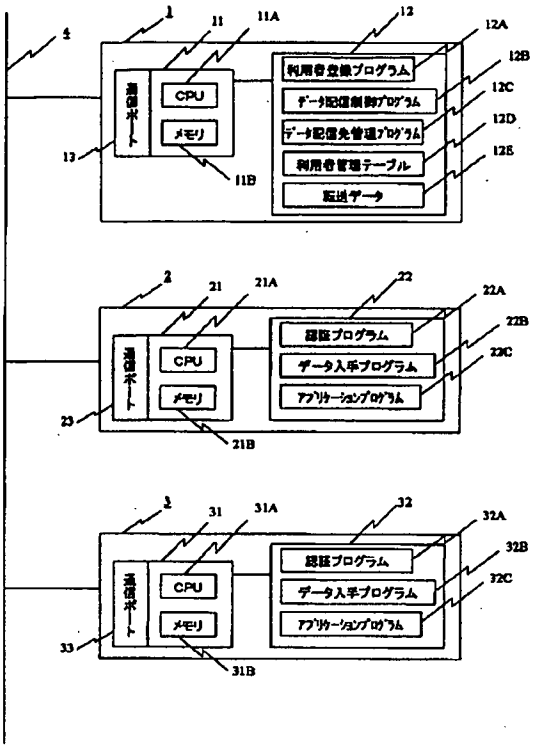
[Claim 5] Said message distribution processing means are one which is characterized by specifying the client computer which distributes data by the identification information of the user proper registered into the server computer in advance of data distribution of data distribution systems according to claim 2 to 4.

[Claim 6] One which is characterized by receiving only the data distribution demand from the client computer of the user who has a means to carry out grouping of the identification information of a user proper, and to store it, and belongs to a specific group of data distribution systems according to claim 2 to 4.

[Translation done.]

Drawing selection Representative drawing

図1



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PRIOR ART

[Description of the Prior Art] The computer applications in schools prosper, the data of the lecture used for a lesson are stored in the server computer, and the system distributed to the client computer which a student uses has been realized. Generally the gestalt which distributes information to the client computer which a student uses is taken from the computer which a teacher uses since it is necessary to offer the same information as all the members in a classroom, and a broadcasting method and a multicast method are used for the communication link in that case.
[0003] However, by the broadcasting method, since data will be distributed to all the client computers linked to a network, a student cannot be divided into a group and data cannot be distributed only to the client computer of the member in a particular group. In order to distribute data only to the member in a particular group, it is necessary to constitute each group as another network using a router, and to prepare the server computer for relaying data distribution for every network of the.
[0004] Moreover, it is possible to distribute data only to the student belonging to a specific group by preparing a multicast group for every group of a student by the multicast method. However, in case it participates in a multicast group, it only expresses that a student participates in a group, and since it is uncontrollable by the server computer by the side of the teacher who distributes data, data will be distributed also to client computers other than the student who wants to carry out data distribution originally.
[0005] Although there is also a unicast method which distributes data for every client computer as other methods, since the time amount which data distribution takes for every client computer in this case differs, when distributing a test question, a complaint etc. may arise for every student. Moreover, in distributing the game program in which two or more persons participate via a network, it is necessary to prepare beforehand the function which measures time amount into a program by the case where he wants to attach a handicap to each participant.

[Translation done.]

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MEANS

[Means for Solving the Problem] In order that this invention may attain the above-mentioned purpose, the data distribution demand to a server computer from each client computer is received. In a server computer, check processing of the user of the client computer of a requiring agency is performed. When it corresponds to the user registered beforehand, the client computer of the user concerned is specified. Data are distributed only to the specified client computer. After distribution termination, coincidence or the time difference set up beforehand is attached to each client computer. Or after checking having transmitted the notice of distribution termination and having received said notice of distribution termination in each client computer in the sequence set up beforehand, it is characterized by making the received data transmit to an application program.
[0008] Moreover, a check processing means to check whether a server computer is the user by whom the user of the client computer of data distribution demand origin is registered beforehand, Specify a user's client computer registered beforehand and data are distributed only to the specified client computer. After distribution termination, coincidence or the time difference set up beforehand is attached to each client computer. Or it is characterized by having a message distribution processing means to transmit the notice of distribution termination in the sequence set up beforehand, and equipping it with a means to transmit the received data to an application program, after said client computer checks having received said notice of distribution termination.
[0009] This invention will be premised on that there is a network which connects them with the server computer which controls distribution of data, and two or more client computers which receive distribution data if it states intelligibly. The user registration program which receives registration of the user who uses the data to distribute on a server computer, the data distribution control program which receives the data distribution demand from the client computer which the specific user is using, and controls data distribution to all users, and the data distribution place manager which manages which data are distributed to which user are working. On each client computer, the authentication program which sets up the user of a client computer, the data acquisition program which receives the data which required data distribution from the server computer and were distributed, and the application program which receives data using a data acquisition program are working.
[0010] If a server computer starts, a user registration program will start and registration of the user who wants to use the data in a server computer will be received. A server manager, for example, a teacher, chooses from the user data which had it registered to which user it would distribute to data to distribute, and he sets it as a data distribution place manager. The data distribution control program which received the data distribution demand receives the file name of data to receive with the user ID from a client computer (it is the identification information of a proper to users, such as a user name), and if it is the demand from the user asked and registered into the data distribution place manager, and data distribution is performed and it is not registered, it refuses data distribution. Moreover, the data distribution place about the data which started distribution is checked, if the data distribution to all distribution places is completed when carrying out coincidence distribution at all users, data distribution termination will be notified to all client computers, and message distribution processing will be ended. Moreover, when it

faces distributing data to two or more users and the distribution sequence is set up, the sequence set up notifies data distribution termination sequentially from a young client computer, and ends message distribution processing. Moreover, if the specified time difference is placed, data distribution termination is notified to each client computer in order and distribution termination is notified to all client computers after notifying data distribution termination to the first user's client computer when time difference is specified among users, message distribution processing will be ended.

[0011] If each client computer starts, a user will enter the password proving User ID and a user, in order to attest a user to an authentication program. As a means to attest a user, direct password data can be inputted from a keyboard, the data stored in a medium like a floppy (trademark) disk or an IC card can be used, or biometrics functions, such as a fingerprint and the iris, can be used. If it is attested with the inputted authentication data that he is the user of normal, User ID will be stored in an authentication program and will be transmitted to the user registration program on a server computer. In requiring data distribution of the application utilization time on a client computer, user ID and the file name of data to come to hand are transmitted to the data distribution control program of a server computer using a data acquisition program, required data are received, the notice which reception ended is received, and it ends data acquisition. By performing such distribution control, to a client computer to perform data distribution, it can synchronize, data can be distributed, and the data which the user has received can be made available to coincidence. Moreover, sequence can be given to a user and data distribution can be carried out. Moreover, time difference can be given among users and data distribution can be carried out.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail using a drawing. Drawing 1 is the system configuration Fig. showing the gestalt of 1 operation of the data distribution system which applied this invention. The data distribution system of this operation gestalt consists of a server computer 1 and two or more client computers 2 and 3, and these are connected in the network 4. The server computer 1 consists of CPU11A, the terminal unit 11 which consists of memory 11B, user registration program 12A, data distribution control program 12B, data distribution place manager 12C, user managed table 12D, and the external storage 12 with which distribution data 12E is stored and the communication link port 13. The client computer 2 consists of external storage 22 with which CPU21A, the terminal unit 21 which consists of memory 21B, authentication program 22A, data acquisition program 22B, and application program 22C are stored, and a communication link port 23. Similarly, the client computer 3 consists of external storage 32 with which CPU31A, the terminal unit 31 which consists of memory 31B, authentication program 32A, data acquisition program 32B, and application program 32C are stored, and a communication link port 33.

[0013] Drawing 2 shows the example of a configuration of user registration program 12A and user managed table 12D which data distribution place manager 12C uses, the group name 201 is registered into the 1st train by one line, and the user name or group name 202 which belongs to the group after the 2nd train is registered. Each train is divided with the null or the tab.

[0014] Drawing 3 shows the example of a configuration of the real user table 300 which user registration program 12A holds inside a program, and the real user table 300 consists of the array of the pointer 302 to the list 303 of the user name 301 and group names with which the user belongs.

[0015] Drawing 4 shows the example of a configuration of the distribution place managed table 400 which data distribution place manager 12C holds inside a program, and a distribution place managed table 400 changes the file name 401 to distribute, the group or the user name which distributes the file, and the array of distribution time difference from the array of the pointer 402 to the list 403 which was able to be located in a line in order of distribution, and the pointer 404 to the distribution situation managed table 500 of drawing 5 .

[0016] Drawing 5 is what shows the example of a configuration of the distribution situation managed table 500 which data distribution place manager 12C holds inside a program. The distribution situation managed table 500 Duplication is removed from the list of the groups or user names which are stored in the distribution place managed table 400. It consists of the entry 501 of the number of ****** which

stores the user name arranged in order of distribution, the pointer 502 to the list 503 of arrays of time difference, and the number of users which distribution of the file of a list has not completed.

[0017] Drawing 6 is the example of a user interface for data distribution place manager 12C to receive the definition input of a distribution place. The user interface shown here consists of the list 604 of the user of the file name input field 601, the file name selection field 602, and a distribution place or the group registration field 603, a user, or groups, the completion carbon button 605 of a definition, a sequence setup key 606, and Cancel button 607. As an approach of inputting a file name into the file name input field 601, there are an approach of inputting a direct file name from the keyboard of the server computer 1, the approach of choosing a file by choosing one entry of the file name selection field using the cursor key on a mouse or a keyboard, and carrying out the depression of the double click of a mouse or the enter key of a keyboard, etc. Moreover, in order to register the user or group of a distribution place, what chose one or more entries in the list of a user or groups using the cursor key on a mouse or a keyboard, and was chosen by carrying out the depression of the double click of a mouse or the enter key of a keyboard is registered into a user or the group registration field. If the depression of the sequence setup key 606 is carried out, as shown in drawing 7 , the window for setting up the time difference between the sequence and the users who transmit data to a user will be displayed. By carrying out the depression of the completion carbon button 605 of a definition, the distribution place managed table 400 is updated and processing is ended. Moreover, processing can be interrupted for carrying out the depression of Cancel button 607.

[0018] At the time of a distribution place definition, drawing 7 is the example of the user interface for setting up the distribution time difference between the sequence of the user who distributes data, and a user, and consists of the user name field 701, the order field 702 of transmission, the time difference field 703, the completion carbon button 704 of a definition, and Cancel button 705. The name set as the user or the group registration field at the time of the distribution place definition input which shows the user name field 701 to drawing 6 is displayed as it is. The numeric value which sets up transmitting sequence is inputted into the order field 702 of transmission. A numeric value is an integral value which begins from "1", and when nothing is inputted, "1" is set up by the default. Coincidence distribution is meant when this value is the same. The time difference between the users of the sequence before [one] being set as the order field 702 of transmission is set to the time difference field 703 per second. By carrying out the depression of the completion carbon button 704 of a definition, a sequence setup is ended and it returns to the distribution place definition input state shown in drawing 6 . By carrying out the depression of Cancel button 705, it returns to the distribution place definition input state which discards the data of the sequence set up by then or time difference, and is shown in drawing 6 .

[0019] Drawing 8 is the example of the user interface for inputting the grouping definition of a user for constituting user managed table 12D, and consists of the list 803 of the group name input field 801, the group member namelist field 802, a user, or groups, the additional carbon button 804, the deletion carbon button 805, a completion carbon button 806 of a definition, and Cancel button 807. In order to perform a grouping definition, a keyboard is used for the group name input field 801, and a group name is inputted. The entry chosen as the group member namelist field 802 is added by choosing one or more entries of a user or Group List, and carrying out the depression of the additional carbon button 804. On the contrary, it is deleted from the entry of the group member namelist field 802 by choosing the entry of the group member namelist field 802, and carrying out the depression of the deletion carbon button 805. By carrying out the depression of the completion carbon button 806 of a definition, user managed table 12D is updated and processing is ended. Moreover, processing can be interrupted by carrying out the depression of Cancel button 807.

[0020] Hereafter, actuation of this operation gestalt is explained using a flow chart. Drawing 9 is a flow chart showing actuation of user registration program 12A which works on the server computer 1. A startup of user registration program 12A waits for the connection from the authentication programs 22A and 32A of client computers 2 and 3 (step 901). If it connects from the authentication programs 22A and 32A, a user name will come to hand (step 902). Next, user managed table 12D is read (step 903), and all the groups to whom the user name which came to hand belongs are taken out picking, a list is created

(step 904), the entry data of the real user table 300 added and (step 905) added to the real user table 300 are transmitted to data distribution place manager 12C (step 906), and it repeats from step 901.
[0021] Drawing 10 is a flow chart showing actuation of data distribution place manager 12C which works on the server computer 1. If data distribution place manager 12C starts, the user interface shown in drawing 6 will be displayed on a screen (step 1001), and it will wait for the connection from the data input from a user, data distribution control program 12B, or user registration program 12A (step 1002). Next, when it judges whether the completion carbon button 605 of a definition was pushed (step 1003) and the completion carbon button 605 of a definition is pushed, the data of the file name 601 and the group registration field 603 come to hand (step 1004). A group or a user namelist is created from the data of the user or the group registration field which came to hand (step 1005). A user name list without duplication is created from a group or a user namelist and sequence, and time difference information (step 1006). The distribution situation managed table 500 which made the number of entries the number of ****** is created (step 1007). It registers with the distribution place managed table 400 with two, the file name which came to hand, a group, or a user namelist, (step 1008). The user or the group registration field 603 of the file name input field 601 on a user interface and a distribution place is cleared, and it repeats from step (step 1009) 1002.
[0022] If it judges whether there is any connection from data distribution control program 12B or user registration program 12A (step 1010) and there is no connection when the completion carbon button 605 of a definition is not pushed, it will repeat from step 1002. In the connection from data distribution control program 12B or a distribution time difference timer thread An instruction of a distribution check and distribution termination is received (step 1011), and an instruction judges whether it is a distribution check (step 1012). In a distribution check The file name and user name to distribute come to hand (step 1013), it judges whether it has registered with the distribution place managed table 400 (step 1014), when having registered, distribution **** is returned (step 1015), and it repeats from step 1002. When having not registered, a distribution impossibility is returned (step 1016), and it repeats from step 1002.
[0023] When a distribution termination instruction is received from data distribution control program 12B If it checked whether all distribution of as opposed to the user in front of one in distribution sequence would be completed (step 1017) and distribution is completed The distribution time difference timer thread which set up the time amount of the result subtracted from the time difference which had the time amount which lengthened distribution end time from current time set up is started (step 1018), a standby instruction is transmitted (step 1019), and it repeats from step 1002. If distribution is not completed, it progresses to step 1019.
[0024] When a distribution termination instruction is received from a distribution time difference timer thread If it checked (step 1020) and distribution is completed, whether distribution to the user of the same sequence was completed (is the term of distribution time difference set as "-1" or not?) A distribution termination instruction is transmitted to connection with the user of the same sequence (step 1021). Distribution end time is set up (step 1022). From 501 ****** of the distribution situation managed table 500 The numeric value for several user minutes of the same sequence is decreased (step 1023), and 501 ****** are checked (step 1024), and when 501 ****** are not "0", it repeats from step 1002. When 501 ****** are "0", the distribution place managed table 400 and the distribution situation managed table 500 are canceled (step 1025), and it repeats from step 1002. When the distribution to the same sequence is not completed, the term of the time difference of the distribution situation managed table 500 is set as "-1" which means the completion of distribution (step 1026), a standby instruction is transmitted (step 1027), and it repeats from step 1002.
[0025] In the connection from user registration program 12A, the entry of the real user table 300 comes to hand (step 1028), it investigates whether the user name and the group name with which the user belongs are contained in at least one place of the group of the distribution place managed table 400, or a user namelist (step 1029), and when entering, it is repeated from step 1002. When close is not, a user name is added to the user list of distribution situation managed tables 500 (step 1030), the increment of the 501 ****** in "1" is carried out (step 1031), and it repeats from step 1002.
[0026] Drawing 11 is a flow chart showing actuation of a distribution time difference timer thread. If a

distribution time difference timer thread starts, the end time which added the set-up time amount to current time is calculated (step 1101) and the direction of current time is progressing as compared with current time (step 1102), a distribution termination instruction will be transmitted to data distribution place manager 12C (step 1103), and it will end. If it is not progressing, it repeats from step 1102.

[0027] Drawing 12 is a flow chart showing actuation of data distribution control program 12B which works on the server computer 1. A startup of data distribution control program 12B waits for the connection from a client computer 2 and the data acquisition programs 22B and 32B which work on three (step 1201). If it connects, a child process will be created (step 1202) and the following processings will be advanced. A parent process is repeated from step 1201. a child process receives the file name of a user name and data to come to hand (step 1203), transmits the received user name and the file name of data to come to hand to data distribution place manager 12C (step 1204), and can be distributed -- that answerback is received (step 1205). It confirms whether the contents of answerback can be distributed (step 1206), and when it is not able to distribute, a distribution impossibility is transmitted to the data acquisition programs 22B and 32B (step 1207), and connection is cut and it ends (step 1208). When it is able to distribute, the file which should transmit is opened and data are transmitted to the data acquisition programs 22B and 32B (step 1209). After ending transmission, a distribution termination instruction is transmitted to data distribution place manager 12C (step 1210), and it waits for reception of an instruction from data distribution place manager 12C (step 1211). The received instruction judges whether it is a distribution termination instruction (step 1212), if it is a distribution termination instruction, a distribution termination instruction will be transmitted to the data acquisition programs 22B and 32B (step 1213), and connection will be made (step 1214), and it ends. If the instruction received from data distribution place manager 12C is a standby instruction, it will repeat from step 1211.

[0028] Drawing 13 is a client computer 2 and a flow chart showing the example of actuation of the authentication programs 22A and 32A which work on three. The input of a user name and a password is received (step 1301), authentication is requested from the authentication server prepared separately (step 1302), the authentication programs 22A and 32A judge whether it was attested or not (step 1303), when attested, transmit a user name to user registration program 12A on the server computer 1 (step 1304), and wait for the connection from the data acquisition programs 22B and 32B (step 1305). If it connects from the data acquisition programs 22B and 32B, a user name will be returned (step 1306) and it will repeat from step 1305. When not attested, it repeats from step 1301.

[0029] Drawing 14 is a client computer 2 and a flow chart showing actuation of the data acquisition programs 22B and 32B which work on three. The data acquisition programs 22B and 32B receive the result of whether for a user name to be transmitted to data distribution control program 12B on reception (step 1402) and the server computer 1 (step 1403), and to be able to distribute application programs 22C and 32C to reception (step 1401) and a file name for a user name and a file name from the authentication programs 22A and 32A (step 1404). It judges whether it can distribute or not, and when it cannot distribute (step 1405), a data acquisition impossibility is returned to application programs 22C and 32C (step 1406), and it repeats from step 1402. If data are received from data distribution control program 12B (step 1407) and a distribution termination instruction is received when it can distribute (step 1408), data will be transmitted to application programs 22C and 32C (step 1409), and it will repeat from step 1402.

[0030] Drawing 15 is a client computer 2 and a flow chart showing actuation of the application programs 22C and 32C which work on three. Working, if application programs 22C and 32C are needed as data, they will connect the file on the server computer 1 to the data acquisition programs 22B and 32B, and they transmit a file name (step 1501). a result -- data -- it judges whether it is available (step 1502), and error processing is performed when data acquisition is impossible (step 1503). Otherwise, data are received (step 1504) and future processings are performed.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] In case the data stored on the server computer come to hand, it displays on a screen or the user of two or more client computers connected on the network processes by the program on a client computer, this invention is applied when data need to be distributed to all users that want for data to come to hand with simultaneous or predetermined time difference, and relates to an effective data distribution control system.
[0002]
[Description of the Prior Art] The computer applications in schools prosper, the data of the lecture used for a lesson are stored in the server computer, and the system distributed to the client computer which a student uses has been realized. Generally the gestalt which distributes information to the client computer which a student uses is taken from the computer which a teacher uses since it is necessary to offer the same information as all the members in a classroom, and a broadcasting method and a multicast method are used for the communication link in that case.
[0003] However, by the broadcasting method, since data will be distributed to all the client computers linked to a network, a student cannot be divided into a group and data cannot be distributed only to the client computer of the member in a particular group. In order to distribute data only to the member in a particular group, it is necessary to constitute each group as another network using a router, and to prepare the server computer for relaying data distribution for every network of the.
[0004] Moreover, it is possible to distribute data only to the student belonging to a specific group by preparing a multicast group for every group of a student by the multicast method. However, in case it participates in a multicast group, it only expresses that a student participates in a group, and since it is uncontrollable by the server computer by the side of the teacher who distributes data, data will be distributed also to client computers other than the student who wants to carry out data distribution originally.
[0005] Although there is also a unicast method which distributes data for every client computer as other methods, since the time amount which data distribution takes for every client computer in this case differs, when distributing a test question, a complaint etc. may arise for every student. Moreover, in distributing the game program in which two or more persons participate via a network, it is necessary to prepare beforehand the function which measures time amount into a program by the case where he wants to attach a handicap to each participant.
[0006]
[Problem(s) to be Solved by the Invention] This invention carries out grouping of the user of a client who receives in distributing data to two or more client computers, takes a synchronization only to the user who belongs to the group, and aims at offering the data distribution control approach and system which make it possible, to set in order among users, to distribute data or to distinguish between reception of data. [distributing to coincidence]
[0007]

[Means for Solving the Problem] In order that this invention may attain the above-mentioned purpose, the data distribution demand to a server computer from each client computer is received. In a server computer, check processing of the user of the client computer of a requiring agency is performed. When it corresponds to the user registered beforehand, the client computer of the user concerned is specified. Data are distributed only to the specified client computer. After distribution termination, coincidence or the time difference set up beforehand is attached to each client computer. Or after checking having transmitted the notice of distribution termination and having received said notice of distribution termination in each client computer in the sequence set up beforehand, it is characterized by making the received data transmit to an application program.

[0008] Moreover, a check processing means to check whether a server computer is the user by whom the user of the client computer of data distribution demand origin is registered beforehand, Specify a user's client computer registered beforehand and data are distributed only to the specified client computer. After distribution termination, coincidence or the time difference set up beforehand is attached to each client computer. Or it is characterized by having a message distribution processing means to transmit the notice of distribution termination in the sequence set up beforehand, and equipping it with a means to transmit the received data to an application program, after said client computer checks having received said notice of distribution termination.

[0009] This invention will be premised on that there is a network which connects them with the server computer which controls distribution of data, and two or more client computers which receive distribution data if it states intelligibly. The user registration program which receives registration of the user who uses the data to distribute on a server computer, the data distribution control program which receives the data distribution demand from the client computer which the specific user is using, and controls data distribution to all users, and the data distribution place manager which manages which data are distributed to which user are working. On each client computer, the authentication program which sets up the user of a client computer, the data acquisition program which receives the data which required data distribution from the server computer and were distributed, and the application program which receives data using a data acquisition program are working.

[0010] If a server computer starts, a user registration program will start and registration of the user who wants to use the data in a server computer will be received. A server manager, for example, a teacher, chooses from the user data which had it registered to which user it would distribute to data to distribute, and he sets it as a data distribution place manager. The data distribution control program which received the data distribution demand receives the file name of data to receive with the user ID from a client computer (it is the identification information of a proper to users, such as a user name), and if it is the demand from the user asked and registered into the data distribution place manager, and data distribution is performed and it is not registered, it refuses data distribution. Moreover, the data distribution place about the data which started distribution is checked, if the data distribution to all distribution places is completed when carrying out coincidence distribution at all users, data distribution termination will be notified to all client computers, and message distribution processing will be ended. Moreover, when it faces distributing data to two or more users and the distribution sequence is set up, the sequence set up notifies data distribution termination sequentially from a young client computer, and ends message distribution processing. Moreover, if the specified time difference is placed, data distribution termination is notified to each client computer in order and distribution termination is notified to all client computers after notifying data distribution termination to the first user's client computer when time difference is specified among users, message distribution processing will be ended.

[0011] If each client computer starts, a user will enter the password proving User ID and a user, in order to attest a user to an authentication program. As a means to attest a user, direct password data can be inputted from a keyboard, the data stored in a medium like a floppy (trademark) disk or an IC card can be used, or biometrics functions, such as a fingerprint and the iris, can be used. If it is attested with the inputted authentication data that he is the user of normal, User ID will be stored in an authentication program and will be transmitted to the user registration program on a server computer. In requiring data distribution of the application utilization time on a client computer, user ID and the file name of data to

come to hand are transmitted to the data distribution control program of a server computer using a data acquisition program, required data are received, the notice which reception ended is received, and it ends data acquisition. By performing such distribution control, to a client computer to perform data distribution, it can synchronize, data can be distributed, and the data which the user has received can be made available to coincidence. Moreover, sequence can be given to a user and data distribution can be carried out. Moreover, time difference can be given among users and data distribution can be carried out.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail using a drawing. Drawing 1 is the system configuration Fig. showing the gestalt of 1 operation of the data distribution system which applied this invention. The data distribution system of this operation gestalt consists of a server computer 1 and two or more client computers 2 and 3, and these are connected in the network 4. The server computer 1 consists of CPU11A, the terminal unit 11 which consists of memory 11B, user registration program 12A, data distribution control program 12B, data distribution place manager 12C, user managed table 12D, and the external storage 12 with which distribution data 12E is stored and the communication link port 13. The client computer 2 consists of external storage 22 with which CPU21A, the terminal unit 21 which consists of memory 21B, authentication program 22A, data acquisition program 22B, and application program 22C are stored, and a communication link port 23. Similarly, the client computer 3 consists of external storage 32 with which CPU31A, the terminal unit 31 which consists of memory 31B, authentication program 32A, data acquisition program 32B, and application program 32C are stored, and a communication link port 33.

[0013] Drawing 2 shows the example of a configuration of user registration program 12A and user managed table 12D which data distribution place manager 12C uses, the group name 201 is registered into the 1st train by one line, and the user name or group name 202 which belongs to the group after the 2nd train is registered. Each train is divided with the null or the tab.

[0014] Drawing 3 shows the example of a configuration of the real user table 300 which user registration program 12A holds inside a program, and the real user table 300 consists of the array of the pointer 302 to the list 303 of the user name 301 and group names with which the user belongs.

[0015] Drawing 4 shows the example of a configuration of the distribution place managed table 400 which data distribution place manager 12C holds inside a program, and a distribution place managed table 400 changes the file name 401 to distribute, the group or the user name which distributes the file, and the array of distribution time difference from the array of the pointer 402 to the list 403 which was able to be located in a line in order of distribution, and the pointer 404 to the distribution situation managed table 500 of drawing 5 .

[0016] Drawing 5 is what shows the example of a configuration of the distribution situation managed table 500 which data distribution place manager 12C holds inside a program. The distribution situation managed table 500 Duplication is removed from the list of the groups or user names which are stored in the distribution place managed table 400. It consists of the entry 501 of the number of ****** which stores the user name arranged in order of distribution, the pointer 502 to the list 503 of arrays of time difference, and the number of users which distribution of the file of a list has not completed.

[0017] Drawing 6 is the example of a user interface for data distribution place manager 12C to receive the definition input of a distribution place. The user interface shown here consists of the list 604 of the user of the file name input field 601, the file name selection field 602, and a distribution place or the group registration field 603, a user, or groups, the completion carbon button 605 of a definition, a sequence setup key 606, and Cancel button 607. As an approach of inputting a file name into the file name input field 601, there are an approach of inputting a direct file name from the keyboard of the server computer 1, the approach of choosing a file by choosing one entry of the file name selection field using the cursor key on a mouse or a keyboard, and carrying out the depression of the double click of a mouse or the enter key of a keyboard, etc. Moreover, in order to register the user or group of a distribution place, what chose one or more entries in the list of a user or groups using the cursor key on a mouse or a keyboard, and was chosen by carrying out the depression of the double click of a mouse or

the enter key of a keyboard is registered into a user or the group registration field. If the depression of the sequence setup key 606 is carried out, as shown in drawing 7 , the window for setting up the time difference between the sequence and the users who transmit data to a user will be displayed. By carrying out the depression of the completion carbon button 605 of a definition, the distribution place managed table 400 is updated and processing is ended. Moreover, processing can be interrupted for carrying out the depression of Cancel button 607.

[0018] At the time of a distribution place definition, drawing 7 is the example of the user interface for setting up the distribution time difference between the sequence of the user who distributes data, and a user, and consists of the user name field 701, the order field 702 of transmission, the time difference field 703, the completion carbon button 704 of a definition, and Cancel button 705. The name set as the user or the group registration field at the time of the distribution place definition input which shows the user name field 701 to drawing 6 is displayed as it is. The numeric value which sets up transmitting sequence is inputted into the order field 702 of transmission. A numeric value is an integral value which begins from "1", and when nothing is inputted, "1" is set up by the default. Coincidence distribution is meant when this value is the same. The time difference between the users of the sequence before [one] being set as the order field 702 of transmission is set to the time difference field 703 per second. By carrying out the depression of the completion carbon button 704 of a definition, a sequence setup is ended and it returns to the distribution place definition input state shown in drawing 6 . By carrying out the depression of Cancel button 705, it returns to the distribution place definition input state which discards the data of the sequence set up by then or time difference, and is shown in drawing 6 .

[0019] Drawing 8 is the example of the user interface for inputting the grouping definition of a user for constituting user managed table 12D, and consists of the list 803 of the group name input field 801, the group member namelist field 802, a user, or groups, the additional carbon button 804, the deletion carbon button 805, a completion carbon button 806 of a definition, and Cancel button 807. In order to perform a grouping definition, a keyboard is used for the group name input field 801, and a group name is inputted. The entry chosen as the group member namelist field 802 is added by choosing one or more entries of a user or Group List, and carrying out the depression of the additional carbon button 804. On the contrary, it is deleted from the entry of the group member namelist field 802 by choosing the entry of the group member namelist field 802, and carrying out the depression of the deletion carbon button 805. By carrying out the depression of the completion carbon button 806 of a definition, user managed table 12D is updated and processing is ended. Moreover, processing can be interrupted by carrying out the depression of Cancel button 807.

[0020] Hereafter, actuation of this operation gestalt is explained using a flow chart. Drawing 9 is a flow chart showing actuation of user registration program 12A which works on the server computer 1. A startup of user registration program 12A waits for the connection from the authentication programs 22A and 32A of client computers 2 and 3 (step 901). If it connects from the authentication programs 22A and 32A, a user name will come to hand (step 902). Next, user managed table 12D is read (step 903), and all the groups to whom the user name which came to hand belongs are taken out picking, a list is created (step 904), the entry data of the real user table 300 added and (step 905) added to the real user table 300 are transmitted to data distribution place manager 12C (step 906), and it repeats from step 901.

[0021] Drawing 10 is a flow chart showing actuation of data distribution place manager 12C which works on the server computer 1. If data distribution place manager 12C starts, the user interface shown in drawing 6 will be displayed on a screen (step 1001), and it will wait for the connection from the data input from a user, data distribution control program 12B, or user registration program 12A (step 1002). Next, when it judges whether the completion carbon button 605 of a definition was pushed (step 1003) and the completion carbon button 605 of a definition is pushed, the data of the file name 601 and the group registration field 603 come to hand (step 1004). A group or a user namelist is created from the data of the user or the group registration field which came to hand (step 1005). A user name list without duplication is created from a group or a user namelist and sequence, and time difference information (step 1006). The distribution situation managed table 500 which made the number of entries the number of ****** is created (step 1007). It registers with the distribution place managed table 400 with two, the

file name which came to hand, a group, or a user namelist, (step 1008). The user or the group registration field 603 of the file name input field 601 on a user interface and a distribution place is cleared, and it repeats from step (step 1009) 1002.

[0022] If it judges whether there is any connection from data distribution control program 12B or user registration program 12A (step 1010) and there is no connection when the completion carbon button 605 of a definition is not pushed, it will repeat from step 1002. In the connection from data distribution control program 12B or a distribution time difference timer thread An instruction of a distribution check and distribution termination is received (step 1011), and an instruction judges whether it is a distribution check (step 1012). In a distribution check The file name and user name to distribute come to hand (step 1013), it judges whether it has registered with the distribution place managed table 400 (step 1014), when having registered, distribution **** is returned (step 1015), and it repeats from step 1002. When having not registered, a distribution impossibility is returned (step 1016), and it repeats from step 1002.

[0023] When a distribution termination instruction is received from data distribution control program 12B If it checked whether all distribution of as opposed to the user in front of one in distribution sequence would be completed (step 1017) and distribution is completed The distribution time difference timer thread which set up the time amount of the result subtracted from the time difference which had the time amount which lengthened distribution end time from current time set up is started (step 1018), a standby instruction is transmitted (step 1019), and it repeats from step 1002. If distribution is not completed, it progresses to step 1019.

[0024] When a distribution termination instruction is received from a distribution time difference timer thread If it checked (step 1020) and distribution is completed, whether distribution to the user of the same sequence was completed (is the term of distribution time difference set as "-1" or not?) A distribution termination instruction is transmitted to connection with the user of the same sequence (step 1021). Distribution end time is set up (step 1022). From 501 ****** of the distribution situation managed table 500 The numeric value for several user minutes of the same sequence is decreased (step 1023), and 501 ****** are checked (step 1024), and when 501 ****** are not "0", it repeats from step 1002. When 501 ****** are "0", the distribution place managed table 400 and the distribution situation managed table 500 are canceled (step 1025), and it repeats from step 1002. When the distribution to the same sequence is not completed, the term of the time difference of the distribution situation managed table 500 is set as "-1" which means the completion of distribution (step 1026), a standby instruction is transmitted (step 1027), and it repeats from step 1002.

[0025] In the connection from user registration program 12A, the entry of the real user table 300 comes to hand (step 1028), it investigates whether the user name and the group name with which the user belongs are contained in at least one place of the group of the distribution place managed table 400, or a user namelist (step 1029), and when entering, it is repeated from step 1002. When close is not, a user name is added to the user list of distribution situation managed tables 500 (step 1030), the increment of the 501 ****** in "1" is carried out (step 1031), and it repeats from step 1002.

[0026] Drawing 11 is a flow chart showing actuation of a distribution time difference timer thread. If a distribution time difference timer thread starts, the end time which added the set-up time amount to current time is calculated (step 1101) and the direction of current time is progressing as compared with current time (step 1102), a distribution termination instruction will be transmitted to data distribution place manager 12C (step 1103), and it will end. If it is not progressing, it repeats from step 1102.

[0027] Drawing 12 is a flow chart showing actuation of data distribution control program 12B which works on the server computer 1. A startup of data distribution control program 12B waits for the connection from a client computer 2 and the data acquisition programs 22B and 32B which work on three (step 1201). If it connects, a child process will be created (step 1202) and the following processings will be advanced. A parent process is repeated from step 1201. a child process receives the file name of a user name and data to come to hand (step 1203), transmits the received user name and the file name of data to come to hand to data distribution place manager 12C (step 1204), and can be distributed -- that answerback is received (step 1205). It confirms whether the contents of answerback can be distributed (step 1206), and when it is not able to distribute, a distribution impossibility is

transmitted to the data acquisition programs 22B and 32B (step 1207), and connection is cut and it ends (step 1208). When it is able to distribute, the file which should transmit is opened and data are transmitted to the data acquisition programs 22B and 32B (step 1209). After ending transmission, a distribution termination instruction is transmitted to data distribution place manager 12C (step 1210), and it waits for reception of an instruction from data distribution place manager 12C (step 1211). The received instruction judges whether it is a distribution termination instruction (step 1212), if it is a distribution termination instruction, a distribution termination instruction will be transmitted to the data acquisition programs 22B and 32B (step 1213), and connection will be made (step 1214), and it ends. If the instruction received from data distribution place manager 12C is a standby instruction, it will repeat from step 1211.

[0028] Drawing 13 is a client computer 2 and a flow chart showing the example of actuation of the authentication programs 22A and 32A which work on three. The input of a user name and a password is received (step 1301), authentication is requested from the authentication server prepared separately (step 1302), the authentication programs 22A and 32A judge whether it was attested or not (step 1303), when attested, transmit a user name to user registration program 12A on the server computer 1 (step 1304), and wait for the connection from the data acquisition programs 22B and 32B (step 1305). If it connects from the data acquisition programs 22B and 32B, a user name will be returned (step 1306) and it will repeat from step 1305. When not attested, it repeats from step 1301.

[0029] Drawing 14 is a client computer 2 and a flow chart showing actuation of the data acquisition programs 22B and 32B which work on three. The data acquisition programs 22B and 32B receive the result of whether for a user name to be transmitted to data distribution control program 12B on reception (step 1402) and the server computer 1 (step 1403), and to be able to distribute application programs 22C and 32C to reception (step 1401) and a file name for a user name and a file name from the authentication programs 22A and 32A (step 1404). It judges whether it can distribute or not, and when it cannot distribute (step 1405), a data acquisition impossibility is returned to application programs 22C and 32C (step 1406), and it repeats from step 1402. If data are received from data distribution control program 12B (step 1407) and a distribution termination instruction is received when it can distribute (step 1408), data will be transmitted to application programs 22C and 32C (step 1409), and it will repeat from step 1402.

[0030] Drawing 15 is a client computer 2 and a flow chart showing actuation of the application programs 22C and 32C which work on three. Working, if application programs 22C and 32C are needed as data, they will connect the file on the server computer 1 to the data acquisition programs 22B and 32B, and they transmit a file name (step 1501). a result -- data -- it judges whether it is available (step 1502), and error processing is performed when data acquisition is impossible (step 1503). Otherwise, data are received (step 1504) and future processings are performed.

[0031]

[Effect of the Invention] When two or more computers need to receive information to coincidence according to this invention so that clearly from the above explanation, grouping of two or more specific computers is carried out, and it uses and is effective, when data can be transmitted only to the computer by which grouping was carried out at coincidence and coincidence must be made to complete reception of a test question at schools etc. Moreover, a data user's receiving sequence can be set up, and time difference can be given, and data can be distributed to a user. The unfairness produced when the timing which receives data for every user differs by this can be abolished, or use gestalten, such as handicap ******, such as delaying the processing initiation for every data addressee conversely, can be realized. Moreover, since it can determine from the side which transmits a transmission place, it can avoid making other groups' data with which he does not belong from a client side come to hand.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] When two or more computers need to receive information to coincidence according to this invention so that clearly from the above explanation, grouping of two or more specific computers is carried out, and it uses and is effective, when data can be transmitted only to the computer by which grouping was carried out at coincidence and coincidence must be made to complete reception of a test question at schools etc. Moreover, a data user's receiving sequence can be set up, and time difference can be given, and data can be distributed to a user. The unfairness produced when the timing which receives data for every user differs by this can be abolished, or use gestalten, such as handicap ******, such as delaying the processing initiation for every data addressee conversely, can be realized. Moreover, since it can determine from the side which transmits a transmission place, it can avoid making other groups' data with which he does not belong from a client side come to hand.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] In case the data stored on the server computer come to hand, it displays on a screen or the user of two or more client computers connected on the network processes by the program on a client computer, this invention is applied when data need to be distributed to all users that want for data to come to hand with simultaneous or predetermined time difference, and relates to an effective data distribution control system.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the system configuration Fig. showing the operation gestalt of the data distribution system concerning this invention.
[Drawing 2] It is drawing showing the example of a configuration of the user managed table which the user registration program and data distribution place manager which work on the server computer of the data distribution system concerning this invention use.
[Drawing 3] The user registration program which works on the server computer of the data distribution system concerning this invention is drawing showing the example of the real user table currently held inside a program.
[Drawing 4] The data distribution place manager which works on the server computer of the data distribution system concerning this invention is drawing showing the example of the distribution place managed table currently held inside a program.
[Drawing 5] The data distribution place manager which works on the server computer of the data distribution system concerning this invention is drawing showing the example of the distribution situation managed table currently held inside a program.
[Drawing 6] It is drawing showing the example of a user interface for the data distribution place manager which works on the server computer of the data distribution system concerning this invention to receive the input of a distribution place definition.
[Drawing 7] It is drawing showing the example of a user interface for the data distribution place manager which works on the server computer of the data distribution system concerning this invention to set up the distribution time difference between the sequence of the user who distributes data, and a user at the time of a distribution place definition.
[Drawing 8] In case the user managed table stored on the server computer of the data distribution system concerning this invention is created, it is drawing showing the example of the user interface for receiving a user's group definition input.
[Drawing 9] It is the flow chart which shows actuation of the user registration program which works on the server computer concerning this invention.
[Drawing 10] It is the flow chart which shows actuation of the data distribution place manager which works on the server computer concerning this invention.
[Drawing 11] It is a flow chart showing the actuation of a distribution time difference timer thread which the data distribution place manager which works on the server computer concerning this invention starts.
[Drawing 12] It is the flow chart which shows actuation of the data distribution control program which works on the server computer concerning this invention.
[Drawing 13] It is the flow chart which shows actuation of the authentication program which works on the client computer concerning this invention.
[Drawing 14] It is the flow chart which showed actuation of the data acquisition program which works on the client computer concerning this invention.

[Drawing 15] It is the flow chart which shows actuation of the application program which works on the client computer concerning this invention.

[Description of Notations]

1 -- 2 A server computer, 3 -- A client computer, 4 -- Network, 11, 21, 31 -- A terminal unit, 11A and 21A, 31 A--CPU, 11B, 21B, 31B -- Memory, 12, 22, 32 -- External storage, 13, 23, 33 -- Communication link port, 12A -- A user registration program, 12B -- Data distribution control program, 12C [-- An authentication program, 22B, 32B / -- A data acquisition program, 22C 32C / -- Application program.] -- A data distribution place manager, 12D -- A user managed table, 12E -- Distribution data, 22A, 32A

[Translation done.]

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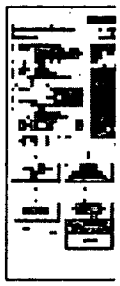
Title: **JP2000330881A2: METHOD AND SYSTEM FOR CONTROLLING DAT DISTRIBUTION**

Derwent Title: Data transmission control procedure in computer-based education system, involves checking transmission and reception notice of data transmission completion, to forward received data to application program [Derwent Record]



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Assignee: **HITACHI SOFTWARE ENG CO LTD**
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Priority Number: 1999-05-24 **JP1999000142632**

Abstract:

PROBLEM TO BE SOLVED: To gives a time difference to simultaneous distribution, sequenced data distribution, or the reception of data by sending data to only specific grouped computers.

SOLUTION: A server administrator sets to which user data to be distributed are distributed in a data distribution destination management program 12C. A data distribution control program 12B having received a data distribution request receives the user IDs and desirable data file names of client computers 2 and 3 and distributes the files at requests made by users registered in the data distributing destination management program 12. The distribution destination of data which begins to be distributed is checked and when the data are distributed to all members at the same time, the end of the data distribution is reported to all the client computers 2 and 3 after the data distribution is completed. When distribution order is set, the data distribution end is reported in order from the client computer 2, etc., having the smallest set order.

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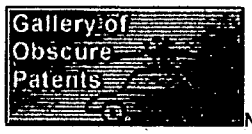

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JP2000330881

Publication Title:

METHOD AND SYSTEM FOR CONTROLLING DATA DISTRIBUTION

Abstract:

Abstract of JP2000330881

PROBLEM TO BE SOLVED: To gives a time difference to simultaneous distribution, sequenced data distribution, or the reception of data by sending data to only specific grouped computers. SOLUTION: A server administrator sets to which user data to be distributed are distributed in a data distribution destination management program 12C. A data distribution control program 12B having received a data distribution request receives the user IDs and desirable data file names of client computers 2 and 3 and distributes the files at requests made by users registered in the data distributing destination management program 12. The distribution destination of data which begins to be distributed is checked and when the data are distributed to all members at the same time, the end of the data distribution is reported to all the client computers 2 and 3 after the data distribution is completed. When distribution order is set, the data distribution end is reported in order from the client computer 2, etc., having the smallest set order.

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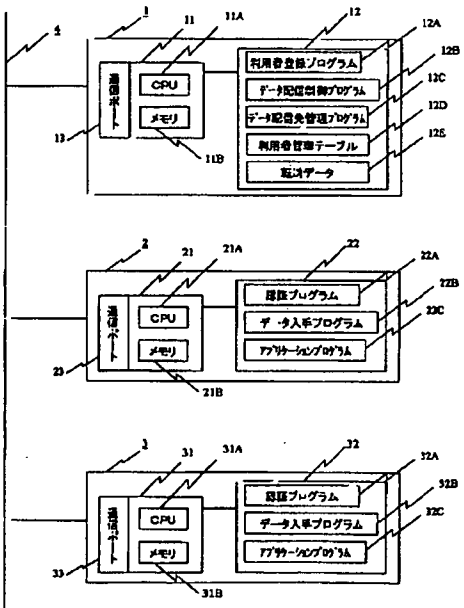
(54)【発明の名称】　データ配信制御方法およびシステム

(57)【要約】
【課題】　複数のクライアントコンピュータに対してデータを同時、または時間差を付けて、または順序付けして配信可能にすること。
【解決手段】　各クライアントコンピュータからサーバコンピュータへのデータ配信要求に対し、サーバコンピュータにおいて要求元のクライアントコンピュータの利用者の確認処理を行い、予め登録されている利用者に該当する場合は当該利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して同時または予め設定した時間差を付け、または予め設定した順序で配信終了通知を送信し、各クライアントコンピュータにおいては前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送させる。

図1



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【特許請求の範囲】
【請求項１】　サーバコンピュータから複数のクライアントコンピュータ上で稼動するアプリケーションプログラムに対してデータを配信するデータ配信制御方法であって、
各クライアントコンピュータからサーバコンピュータへのデータ配信要求に対し、サーバコンピュータにおいて要求元のクライアントコンピュータの利用者の確認処理を行い、予め登録されている利用者に該当する場合は当該利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して同時または予め設定した時間差を付け、または予め設定した順序で配信終了通知を送信し、各クライアントコンピュータにおいては前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送させることを特徴とするデータ配信制御方法。
【請求項２】　サーバコンピュータと複数のクライアントコンピュータから成り、サーバコンピュータから複数のクライアントコンピュータ上で稼動するアプリケーションプログラムに対してデータを配信するデータ配信システムであって、
前記サーバコンピュータが、データ配信要求元のクライアントコンピュータの利用者が予め登録されている利用者であるか否かを確認する確認処理手段と、予め登録されている利用者に該当する場合は当該利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して同時に配信終了通知を送信する配信処理手段とを備え、
前記クライアントコンピュータが、前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送する手段を備えることを特徴とするデータ配信システム。
【請求項３】　サーバコンピュータと複数のクライアントコンピュータから成り、サーバコンピュータから複数のクライアントコンピュータ上で稼動するアプリケーションプログラムに対してデータを配信するデータ配信システムであって、
前記サーバコンピュータが、データ配信要求元のクライアントコンピュータの利用者が予め登録されている利用者であるか否かを確認する確認処理手段と、予め登録されている利用者に該当する場合は当該利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して予め設定した時間差を付けて配信終了通知を送信する配信処理手段とを備え、
前記クライアントコンピュータが、前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送する手段を備えることを特徴とするデータ配信システム。
【請求項４】　サーバコンピュータと複数のクライアントコンピュータから成り、サーバコンピュータから複数のクライアントコンピュータ上で稼動するアプリケーションプログラムに対してデータを配信するデータ配信システムであって、
前記サーバコンピュータが、データ配信要求元のクライアントコンピュータの利用者が予め登録されている利用者であるか否かを確認する確認処理手段と、予め登録されている利用者に該当する場合は当該利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して予め設定した順序で配信終了通知を送信する配信処理手段とを備え、
前記クライアントコンピュータが、前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送する手段を備えることを特徴とするデータ配信システム。
【請求項５】　前記配信処理手段は、データ配信に先立ってサーバコンピュータに登録された利用者固有の識別情報によってデータを配信するクライアントコンピュータを特定することを特徴とする請求項２～４記載のいずれかのデータ配信システム。
【請求項６】　利用者固有の識別情報をグループ化して格納する手段を備え、特定のグループに属する利用者のクライアントコンピュータからのデータ配信要求のみを受け付けることを特徴とする請求項２～４記載のいずれかのデータ配信システム。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ネットワーク上に接続された複数のクライアントコンピュータの利用者が、サーバコンピュータ上に格納されたデータを入手して画面上に表示したり、クライアントコンピュータ上のプログラムで処理を行う際に、データを入手したい利用者全員に同時にまたは所定の時間差をもってデータが配信される必要がある場合に適用して有効なデータ配信制御システムに関するものである。
【０００２】
【従来の技術】教育現場でのコンピュータ利用が盛んになり、授業に利用する講義のデータをサーバコンピュータに格納しておき、生徒が利用するクライアントコンピュータに配信するシステムが実現されてきている。一般に教室内では、全員に同じ情報を提供する必要があるため、教師が使用するコンピュータから生徒が利用するクライアントコンピュータに対して情報を配信する形態が取られており、その際の通信にはブロードキャスト方式やマルチキャスト方式が利用される。

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【0003】しかし、ブロードキャスト方式では、ネットワークに接続している全てのクライアントコンピュータにデータが配信されてしまうため、生徒をグループに分けて、特定グループ内のメンバのクライアントコンピュータにだけデータを配信することはできない。特定グループ内のメンバにだけデータを配信するためには、ルータを使って各グループを別のネットワークとして構成し、そのネットワークごとにデータ配信を中継するためのサーバコンピュータを用意する必要がある。

【0004】また、マルチキャスト方式では、生徒のグループごとにマルチキャストグループを設けることで、特定のグループに属する生徒だけにデータを配信することが可能である。しかし、マルチキャストグループに参加する際には、生徒がグループに参加することを表明するだけであり、データを配信する教師側のサーバコンピュータで制御できないため、本来データ配信したい生徒以外のクライアントコンピュータにもデータが配信されてしまう。

【0005】その他の方式として、各クライアントコンピュータごとにデータを配信するユニキャスト方式もあるが、この場合、クライアントコンピュータごとにデータ配信にかかる時間が異なるため、試験問題の配信を行う場合などには、生徒ごとに不平等が生じる可能性がある。また、複数人が参加するゲームプログラムをネットワーク経由で配布するにあたって、各参加者にハンディキャップを付けたい場合などでは、プログラム中に時間を計測する機能をあらかじめ用意しておく必要がある。

【0006】

【発明が解決しようとする課題】本発明は、複数のクライアントコンピュータに対してデータを配信するにあたって、受信するクライアントの利用者をグループ化して、そのグループに所属する利用者にだけ同期をとって同時に配信したり、利用者間に順序付けしてデータを配信したり、データの受信に時間差を付けたりすることを可能とするデータ配信制御方法およびシステムを提供することを目的とするものである。

【0007】

【課題を解決するための手段】本発明は、上記目的を達成するために、各クライアントコンピュータからサーバコンピュータへのデータ配信要求に対し、サーバコンピュータにおいて要求元のクライアントコンピュータの利用者の確認処理を行い、予め登録されている利用者に該当する場合は当該利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して同時または予め設定した時間差を付け、または予め設定した順序で配信終了通知を送信し、各クライアントコンピュータにおいては前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送させることを特徴とする。

【0008】また、サーバコンピュータが、データ配信要求元のクライアントコンピュータの利用者が予め登録されている利用者であるか否かを確認する確認処理手段と、予め登録されている利用者のクライアントコンピュータを特定し、特定されたクライアントコンピュータに対してのみデータを配信し、配信終了の後に、各クライアントコンピュータに対して同時または予め設定した時間差を付け、または予め設定した順序で配信終了通知を送信する配信処理手段とを備え、前記クライアントコンピュータが、前記配信終了通知を受信したことを確認した後、受信したデータをアプリケーションプログラムに転送する手段を備えることを特徴とする。

【0009】分かり易く述べると、本発明は、データの配信を制御するサーバコンピュータと、配信データを受信する複数のクライアントコンピュータと、それらを接続するネットワークがあることを前提とする。サーバコンピュータ上には、配信するデータを利用する利用者の登録を受け付ける利用者登録プログラムと、特定の利用者が使用しているクライアントコンピュータからのデータ配信要求を受け付け、全ての利用者へのデータ配信を制御するデータ配信制御プログラムと、どのデータをどのユーザに配信するかを管理するデータ配信先管理プログラムが稼働している。各クライアントコンピュータ上には、クライアントコンピュータの利用者を設定する認証プログラムと、サーバコンピュータに対してデータ配信を要求し、配信されたデータを受信するデータ入手プログラムと、データ入手プログラムを使用してデータを入手するアプリケーションプログラムが稼働している。

【0010】サーバコンピュータが起動すると、利用者登録プログラムが起動し、サーバコンピュータ内のデータを利用したい利用者の登録を受け付ける。サーバ管理者、例えば教師は配信したいデータに対して、どの利用者に配信するかを登録された利用者データから選択してデータ配信先管理プログラムに設定する。データ配信要求を受信したデータ配信制御プログラムは、クライアントコンピュータからの利用者ＩＤ（利用者名称等の利用者に固有の識別情報）と受信したいデータのファイル名称を受け付け、データ配信先管理プログラムに問い合わせ、登録してある利用者からの要求であればデータ配信を行い、登録されていなければデータ配信を拒否する。また、配信を開始したデータについてのデータ配信先をチェックし、利用者全員に同時配信する場合は、全ての配信先に対するデータ配信が完了していれば、全てのクライアントコンピュータに対してデータ配信終了を通知して配信処理を終了する。また、複数の利用者にデータを配信するに際し、その配信順序が設定されている場合は、設定されている順序が若いクライアントコンピュータから順にデータ配信終了を通知して配信処理を終了する。また、利用者間に時間差が指定されている場合は、

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最初の利用者のクライアントコンピュータにデータ配信終了を通知した後、指定された時間差を置いて順に各クライアントコンピュータにデータ配信終了を通知し、全クライアントコンピュータに配信終了を通知したら、配信処理を終了する。

【００１１】各クライアントコンピュータが起動すると、利用者は認証プログラムに対して利用者を認証するために利用者ＩＤと利用者を証明するパスワードを入力する。利用者を認証する手段としては、キーボードから直接パスワードデータを入力したり、フロッピー（登録商標）ディスクやＩＣカードのような媒体に格納してあるデータを利用したり、指紋や虹彩などの生体認証機能を使用することができる。入力された認証データによって正規の利用者であることが認証されると、利用者ＩＤが認証プログラム内に格納され、サーバコンピュータ上の利用者登録プログラムに送信される。クライアントコンピュータ上のアプリケーション利用時にデータ配信を要求する場合には、データ入手プログラムを使用してユーザＩＤと入手したいデータのファイル名称をサーバコンピュータのデータ配信制御プログラムに送信し、必要なデータの受信を行い、受信が終了した通知を受け付けてデータ入手を終了する。このような配信制御を行うことにより、データ配信を行いたいクライアントコンピュータに対して、同期してデータを配信することができ、利用者が受信してきたデータを同時に利用可能にすることができる。また、利用者に順序をつけてデータ配信することができる。また、利用者間に時間差をつけてデータ配信することができる。

【００１２】

【発明の実施の形態】以下、本発明の実施の形態を、図面を用いて詳細に説明する。図１は、本発明を適用したデータ配信システムの一実施の形態を示すシステム構成図である。この実施形態のデータ配信システムは、サーバコンピュータ１と、複数のクライアントコンピュータ２，３とで構成され、これらはネットワーク４で接続されている。サーバコンピュータ１は、ＣＰＵ１１Ａ、メモリ１１Ｂからなる端末装置１１、利用者登録プログラム１２Ａ、データ配信制御プログラム１２Ｂ、データ配信先管理プログラム１２Ｃ、利用者管理テーブル１２Ｄ、配信データ１２Ｅが格納されている外部記憶装置１２と通信ポート１３から構成されている。クライアントコンピュータ２は、ＣＰＵ２１Ａ、メモリ２１Ｂからなる端末装置２１、認証プログラム２２Ａ、データ入手プログラム２２Ｂ、アプリケーションプログラム２２Ｃが格納されている外部記憶装置２２と通信ポート２３から構成されている。同様に、クライアントコンピュータ３は、ＣＰＵ３１Ａ、メモリ３１Ｂからなる端末装置３１、認証プログラム３２Ａ、データ入手プログラム３２Ｂ、アプリケーションプログラム３２Ｃが格納されている外部記憶装置３２と通信ポート３３から構成されている。

【００１３】図２は、利用者登録プログラム１２Ａや、データ配信先管理プログラム１２Ｃが使用する利用者管理テーブル１２Ｄの構成例を示すものであり、１つの行には、第１列にグループ名２０１が登録されており、第２列以後にそのグループに属する利用者名またはグループ名２０２が登録されている。各列は、空白またはタブで区切られている。

【００１４】図３は、利用者登録プログラム１２Ａがプログラム内部に保持している実利用者テーブル３００の構成例を示すものであり、実利用者テーブル３００は、利用者名称３０１と、その利用者が属するグループ名称のリスト３０３へのポインタ３０２の配列から成っている。

【００１５】図４は、データ配信先管理プログラム１２Ｃがプログラム内部に保持している配信先管理テーブル４００の構成例を示すものであり、配信先管理テーブル４００は、配信するファイル名称４０１と、そのファイルを配信するグループまたは利用者名称と、配信時間差の配列を配信順にならべたリスト４０３へのポインタ４０２と、図５の配信状況管理テーブル５００へのポインタ４０４の配列から成っている。

【００１６】図５は、データ配信先管理プログラム１２Ｃがプログラム内部に保持している配信状況管理テーブル５００の構成例を示すものであり、配信状況管理テーブル５００は、配信先管理テーブル４００に格納されているグループまたは利用者名称のリストから重複を除き、配信順に並べた利用者名称と時間差の配列のリスト５０３へのポインタ５０２とリストのファイルの配信が完了していないユーザの数を格納する残配信数のエントリ５０１から成っている。

【００１７】図６は、データ配信先管理プログラム１２Ｃが、配信先の定義入力を受け付けるためのユーザインタフェースの例である。ここで示すユーザインタフェースは、ファイル名称入力フィールド６０１、ファイル名称選択フィールド６０２、配信先の利用者またはグループ登録フィールド６０３、利用者またはグループのリスト６０４、定義完了ボタン６０５、順序設定ボタン６０６、キャンセルボタン６０７からなる。ファイル名称入力フィールド６０１にファイル名を入力する方法としては、サーバコンピュータ１のキーボードから直接ファイル名称を入力する方法や、ファイル名称選択フィールドの１つのエントリをマウスまたはキーボード上のカーソルキーを用いて選択し、マウスのダブルクリックまたはキーボードのエンターキーを押下することでファイルを選択する方法などがある。また、配信先の利用者またはグループを登録するには、利用者またはグループのリストにある１つまたは複数のエントリをマウスまたはキーボード上のカーソルキーを用いて選択し、マウスのダブルクリックまたはキーボードのエンターキーを押下する

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ことで選択したものが、利用者またはグループ登録フィールドに登録される。順序設定ボタン６０６を押下すると、図7に示すように、利用者にデータを送信する順序と利用者間の時間差を設定するためのウィンドウが表示される。定義完了ボタン６０５を押下することで、配信先管理テーブル４００を更新して、処理を終了する。また、キャンセルボタン６０７を押下することで、処理を中断することができる。

【００１８】図7は、配信先定義時に、データを配信する利用者の順序と利用者間の配信時間差を設定するためのユーザインタフェースの例であり、利用者名称フィールド７０１、送信順フィールド７０２、時間差フィールド７０３、定義完了ボタン７０４、キャンセルボタン７０５から成っている。利用者名称フィールド７０１は、図6に示す配信先定義入力時の利用者またはグループ登録フィールドに設定された名称がそのまま表示される。送信順フィールド７０２には、送信順序を設定する数値を入力する。数値は「１」から始まる整数値で、何も入力されていない場合はデフォルトで「１」が設定される。この値が同じ場合は、同時配信を意味する。時間差フィールド７０３には、送信順フィールド７０２に設定された１つ前の順番の利用者との間の時間差を秒単位で設定する。定義完了ボタン７０４を押下することにより、順序設定を終了し、図6に示した配信先定義入力状態に戻る。キャンセルボタン７０５を押下することにより、それまでに設定した順序や時間差のデータを廃棄して図6に示す配信先定義入力状態に戻る。

【００１９】図8は、利用者管理テーブル１２Ｄを構成するための、利用者のグループ化定義を入力するためのユーザインタフェースの例であり、グループ名称入力フィールド８０１、グループ員名称リストフィールド８０２、利用者またはグループのリスト８０３、追加ボタン８０４、削除ボタン８０５、定義完了ボタン８０６、キャンセルボタン８０７からなる。グループ化定義を行うためには、グループ名称入力フィールド８０１にキーボードを用いてグループ名称を入力する。利用者またはグループリストの１つまたは複数のエントリを選択して、追加ボタン８０４を押下することにより、グループ員名称リストフィールド８０２に選択したエントリが追加される。逆に、グループ員名称リストフィールド８０２のエントリを選択して、削除ボタン８０５を押下することにより、グループ員名称リストフィールド８０２のエントリから削除される。定義完了ボタン８０６を押下することにより、利用者管理テーブル１２Ｄを更新して、処理を終了する。また、キャンセルボタン８０７を押下することにより、処理を中断することができる。

【００２０】以下、フローチャートを用いて本実施形態の動作を説明する。図9は、サーバコンピュータ１上で稼働する利用者登録プログラム１２Ａの動作を表したフローチャートである。利用者登録プログラム１２Ａが起動すると、クライアントコンピュータ２，３の認証プログラム２２Ａ，３２Ａからの接続を待つ（ステップ９０１）。認証プログラム２２Ａ，３２Ａから接続されたならば、利用者名称を入手する（ステップ９０２）。次に、利用者管理テーブル１２Ｄを読み込み（ステップ９０３）、入手した利用者名称が属しているグループをすべて取り出してリストを作成し（ステップ９０４）、実利用者テーブル３００に追加し（ステップ９０５）、追加した実利用者テーブル３００のエントリデータをデータ配信先管理プログラム１２Ｃに送信し（ステップ９０６）、ステップ９０１から繰り返す。

【００２１】図１０は、サーバコンピュータ１上で稼働するデータ配信先管理プログラム１２Ｃの動作を表したフローチャートである。データ配信先管理プログラム１２Ｃが起動すると、図6に示したユーザインタフェースを画面上に表示し（ステップ１００１）、ユーザからのデータ入力またはデータ配信制御プログラム１２Ｂ、または利用者登録プログラム１２Ａからの接続を待つ（ステップ１００２）。次に、定義完了ボタン６０５が押下されたかどうかを判断し（ステップ１００３）、定義完了ボタン６０５が押下された場合は、ファイル名称６０１とグループ登録フィールド６０３のデータを入手する（ステップ１００４）。入手した利用者またはグループ登録フィールドのデータから、グループまたは利用者名称リストを作成し（ステップ１００５）、グループまたは利用者名称リストと順序、時間差情報から、重複のない利用者名リストを作成（ステップ１００６）し、そのエントリ数を残配信数とした配信状況管理テーブル５００を作成し（ステップ１００７）、入手したファイル名称とグループまたは利用者名称リストの2つとともに配信先管理テーブル４００に登録（ステップ１００８）し、ユーザインタフェース上のファイル名称入力フィールド６０１と配信先の利用者またはグループ登録フィールド６０３をクリアして（ステップ１００９）ステップ１００２から繰り返す。

【００２２】定義完了ボタン６０５が押下されていない場合は、データ配信制御プログラム１２Ｂまたは、利用者登録プログラム１２Ａからの接続があるかどうかを判断し（ステップ１０１０）、接続がなければ、ステップ１００２から繰り返す。データ配信制御プログラム１２Ｂまたは配信時間差タイマスレッドからの接続の場合は、配信チェックか、配信終了かの命令を受信し（ステップ１０１１）、命令が配信チェックかどうかを判断し（ステップ１０１２）、配信チェックの場合は、配信するファイル名称と利用者名称を入手し（ステップ１０１３）、配信先管理テーブル４００に登録してあるかどうかを判断し（ステップ１０１４）、登録してある場合は配信可能を返却し（ステップ１０１５）、ステップ１００２から繰り返す。登録してない場合は配信不可能を返却し（ステップ１０１６）、ステップ１００２から繰り

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返す。

【0023】データ配信制御プログラム12Bから配信終了命令を受信した場合は、配信順序が1つ前の利用者に対しての配信が全て終了しているかを確認し（ステップ1017）、配信が終了していれば、現在時刻から配信終了時刻を引いた時間を設定された時間差から減じた結果の時間を設定した配信時間差タイマスレッドを起動し（ステップ1018）、待機命令を送信し（ステップ1019）、ステップ1002から繰り返す。配信が終了していなければ、ステップ1019へ進む。

【0024】配信時間差タイマスレッドから配信終了命令を受信した場合は、同一順序の利用者への配信が完了したかどうか（配信時間差の項が「－1」に設定してあるかどうか）をチェックし（ステップ1020）、配信が完了していれば、同一順序の利用者への接続に対して配信終了命令を送信し（ステップ1021）、配信終了時刻を設定し（ステップ1022）、配信状況管理テーブル500の残配信数501から、同一順序の利用者数分の数値を減少させ（ステップ1023）、残配信数501をチェックして（ステップ1024）、残配信数501が「0」でない場合は、ステップ1002から繰り返す。残配信数501が「0」の場合は、配信先管理テーブル400、配信状況管理テーブル500を破棄（ステップ1025）して、ステップ1002から繰り返す。同一順序に対する配信が終了していない場合は、配信状況管理テーブル500の時間差の項を配信完了を意味する「－1」に設定し（ステップ1026）、待機命令を送信して（ステップ1027）、ステップ1002から繰り返す。

【0025】利用者登録プログラム12Aからの接続の場合は、実利用者テーブル300のエントリを入手（ステップ1028）し、利用者名称、その利用者が属しているグループ名称が配信先管理テーブル400のグループまたは利用者名称リストの1ヶ所にでも入っていないかどうかを調べ（ステップ1029）、入っていた場合は、ステップ1002から繰り返す。入っていない場合は、配信状況管理テーブル500のユーザリストに利用者名称を追加し（ステップ1030）、残配信数501を「1」増加させて（ステップ1031）、ステップ1002から繰り返す。

【0026】図11は、配信時間差タイマスレッドの動作を表したフローチャートである。配信時間差タイマスレッドが起動すると、設定された時間を現在時刻に加えた終了時刻を計算し（ステップ1101）、現在時刻と比較し（ステップ1102）、現在時刻の方が進んでいたら、データ配信先管理プログラム12Cに配信終了命令を送信し（ステップ1103）、終了する。進んでいなければステップ1102から繰り返す。

【0027】図12は、サーバコンピュータ1上で稼働するデータ配信制御プログラム12Bの動作を表したフローチャートである。データ配信制御プログラム12Bが起動すると、クライアントコンピュータ2，3上で稼働するデータ入手プログラム22B，32Bからの接続を待つ（ステップ1201）。接続されると、子プロセスを作成し（ステップ1202）、以下の処理を進める。親プロセスはステップ1201から繰り返す。子プロセスは、利用者名称と入手したいデータのファイル名を受信し（ステップ1203）、受信した利用者名称と入手したいデータのファイル名をデータ配信先管理プログラム12Cに送信し（ステップ1204）、配信可能かの返答を受信する（ステップ1205）。返答内容が配信可能かどうかをチェックし（ステップ1206）、配信不可能であった場合は、配信不可能をデータ入手プログラム22B，32Bに送信し（ステップ1207）、接続を切断して（ステップ1208）終了する。配信可能であった場合は、送信すべきファイルをオープンしてデータをデータ入手プログラム22B，32Bに送信する（ステップ1209）。送信を終了すると、データ配信先管理プログラム12Cに配信終了命令を送信し（ステップ1210）、データ配信先管理プログラム12Cから命令の受信を待つ（ステップ1211）。受信した命令が配信終了命令かどうか判断し（ステップ1212）、配信終了命令であれば、データ入手プログラム22B，32Bに対して配信終了命令を送信し（ステップ1213）、接続を切断（ステップ1214）して終了する。データ配信先管理プログラム12Cから受信した命令が待機命令であれば、ステップ1211から繰り返す。

【0028】図13は、クライアントコンピュータ2，3上で稼働する認証プログラム22A，32Aの動作の例を表したフローチャートである。認証プログラム22A，32Aは、利用者名称とパスワードの入力を受け付け（ステップ1301）、別途用意された認証サーバに認証を依頼し（ステップ1302）、認証されたかどうかを判断し（ステップ1303）、認証された場合は、サーバコンピュータ1上の利用者登録プログラム12Aに利用者名称を送信して（ステップ1304）、データ入手プログラム22B，32Bからの接続を待つ（ステップ1305）。データ入手プログラム22B，32Bから接続されると、利用者名称を返却して（ステップ1306）、ステップ1305から繰り返す。認証されなかった場合はステップ1301から繰り返す。

【0029】図14は、クライアントコンピュータ2，3上で稼働するデータ入手プログラム22B，32Bの動作を表したフローチャートである。データ入手プログラム22B，32Bは、認証プログラム22A，32Aから利用者名称を受け取り（ステップ1401）、アプリケーションプログラム22C，32Cからファイル名を受け取り（ステップ1402）、サーバコンピュータ1上のデータ配信制御プログラム12Bに対して利用者

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名称とファイル名を送信し（ステップ１４０３）、配信可能かどうかの結果を受信する（ステップ１４０４）。配信可能かどうかを判断し（ステップ１４０５）配信不可能な場合は、アプリケーションプログラム２２Ｃ，３２Ｃに対してデータ入手不可能を返却し（ステップ１４０６）、ステップ１４０２から繰り返す。配信可能な場合は、データ配信制御プログラム１２Ｂからデータを受信し（ステップ１４０７）、配信終了命令を受信したら（ステップ１４０８）、アプリケーションプログラム２２Ｃ，３２Ｃにデータを送信し（ステップ１４０９）、ステップ１４０２から繰り返す。

【００３０】図１５は、クライアントコンピュータ２，３上で稼働するアプリケーションプログラム２２Ｃ，３２Ｃの動作を表したフローチャートである。アプリケーションプログラム２２Ｃ，３２Ｃは、動作中にサーバコンピュータ１上のファイルをデータとして必要になると、データ入手プログラム２２Ｂ，３２Ｂに接続してファイル名称を送信する（ステップ１５０１）。結果がデータ入手可能かどうかを判断し（ステップ１５０２）、データ入手不可能な場合はエラー処理を行う（ステップ１５０３）。そうでなければ、データを受信し（ステップ１５０４）、以後の処理を行う。

【００３１】

【発明の効果】以上の説明から明らかなように、本発明によれば、複数のコンピュータが同時に情報を入手する必要がある場合に、特定の複数のコンピュータをグループ化して、グループ化されたコンピュータにだけに同時にデータを送信することができ、教育現場などで試験問題の受信を同時に完了させなければならない場合などに利用して有効である。また、データ利用者の受信順序を設定し、かつ時間差をつけて利用者にデータを配信することができる。これにより、利用者ごとにデータを受信するタイミングが異なることによって生じる不公平をなくしたり、逆にデータ受信者ごとの処理開始を遅らせるなどのハンディキャップつけるなどの利用形態を実現することができる。また、送信先を送信する側から決定することができるため、クライアント側から自分が属していない他のグループのデータを入手させないようにすることができる。

【図面の簡単な説明】

【図１】本発明に係るデータ配信システムの実施形態を示すシステム構成図である。

【図２】本発明に係るデータ配信システムのサーバコンピュータ上で稼働する利用者登録プログラムやデータ配信先管理プログラムが使用する利用者管理テーブルの構成例を示す図である。

【図３】本発明に係るデータ配信システムのサーバコンピュータ上で稼働する利用者登録プログラムがプログラム内部に保持している実利用者テーブルの例を示す図である。

【図４】本発明に係るデータ配信システムのサーバコンピュータ上で稼働するデータ配信先管理プログラムがプログラム内部に保持している配信先管理テーブルの例を示す図である。

【図５】本発明に係るデータ配信システムのサーバコンピュータ上で稼働するデータ配信先管理プログラムがプログラム内部に保持している配信状況管理テーブルの例を示す図である。

【図６】本発明に係るデータ配信システムのサーバコンピュータ上で稼働するデータ配信先管理プログラムが配信先定義の入力を受け付けるためのユーザインタフェースの例を示す図である。

【図７】本発明に係るデータ配信システムのサーバコンピュータ上で稼動するデータ配信先管理プログラムが配信先定義時に、データを配信する利用者の順序と利用者間の配信時間差を設定するためのユーザインタフェースの例を示す図である。

【図８】本発明に係るデータ配信システムのサーバコンピュータ上に格納されている利用者管理テーブルを作成する際に、利用者のグループ定義入力を受け付けるためのユーザインタフェースの例を示す図である。

【図９】本発明に係るサーバコンピュータ上で稼働する利用者登録プログラムの動作を示すフローチャートである。

【図１０】本発明に係るサーバコンピュータ上で稼働するデータ配信先管理プログラムの動作を示すフローチャートである。

【図１１】本発明に係るサーバコンピュータ上で稼働するデータ配信先管理プログラムが起動する配信時間差タイマスレッドの動作を表したフローチャートである。

【図１２】本発明に係るサーバコンピュータ上で稼働するデータ配信制御プログラムの動作を示すフローチャートである。

【図１３】本発明に係るクライアントコンピュータ上で稼働する認証プログラムの動作を示すフローチャートである。

【図１４】本発明に係るクライアントコンピュータ上で稼働するデータ入手プログラムの動作を示したフローチャートである。

【図１５】本発明に係るクライアントコンピュータ上で稼働するアプリケーションプログラムの動作を示すフローチャートである。

【符号の説明】

１…サーバコンピュータ、２，３…クライアントコンピュータ、４…ネットワーク、１１，２１，３１…端末装置、１１Ａ，２１Ａ，３１Ａ…ＣＰＵ、１１Ｂ，２１Ｂ，３１Ｂ…メモリ、１２，２２，３２…外部記憶装置、１３，２３，３３…通信ポート、１２Ａ…利用者登録プログラム、１２Ｂ…データ配信制御プログラム、１２Ｃ…データ配信先管理プログラム、１２Ｄ…利用者管

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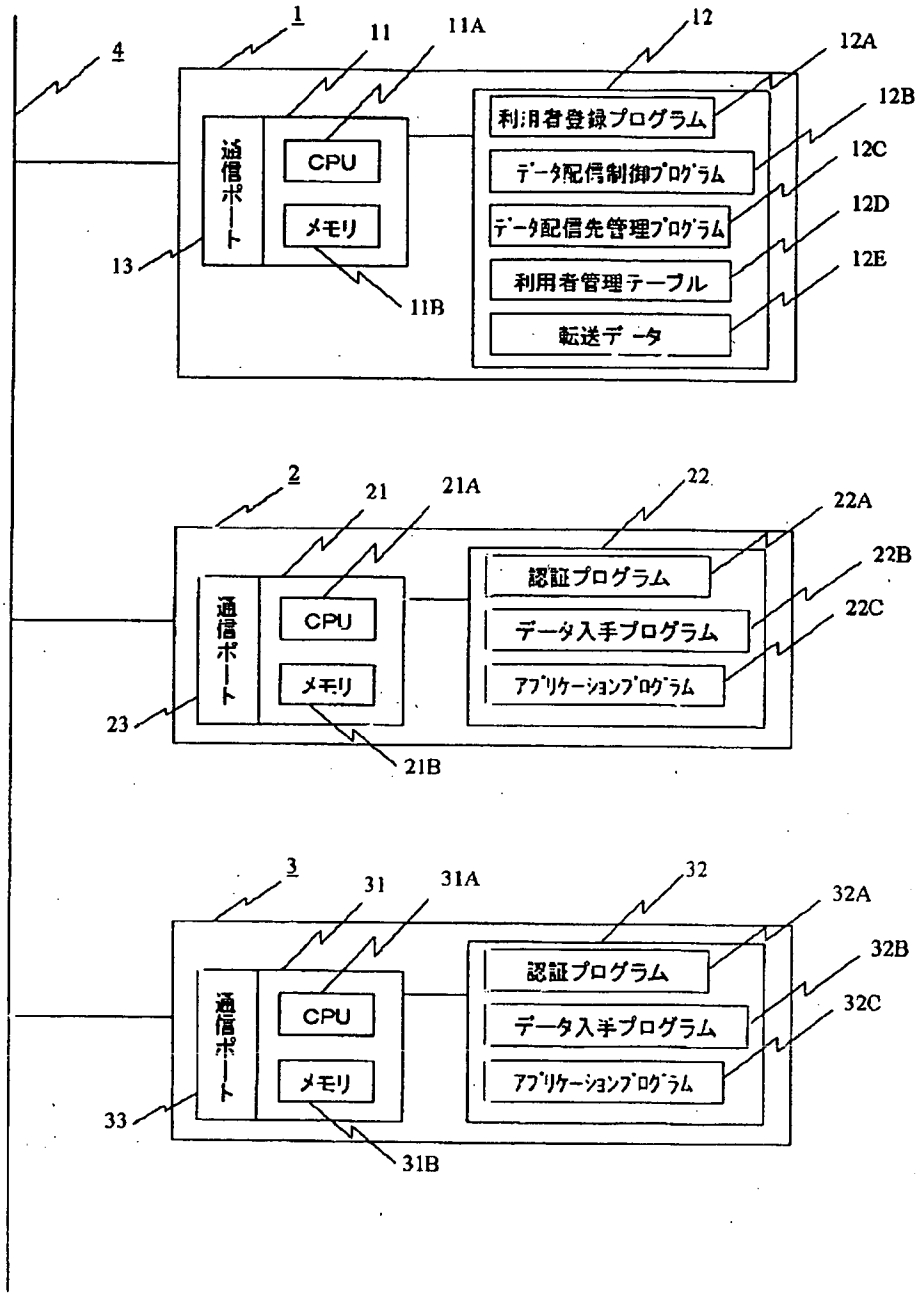
理テーブル、１２Ｅ…配信データ、２２Ａ，３２Ａ…認証プログラム、２２Ｂ，３２Ｂ…データ入手プログラム、２２Ｃ，３２Ｃ…アプリケーションプログラム。

【図１】

図１



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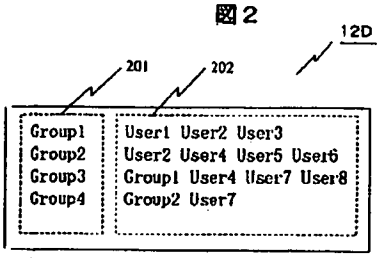
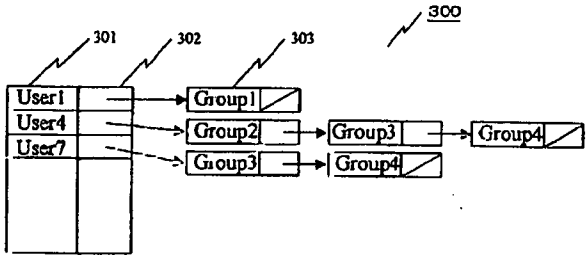
【図2】

図2



【図3】

図3



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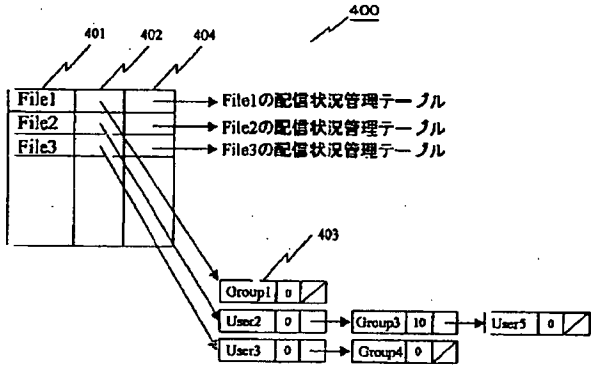

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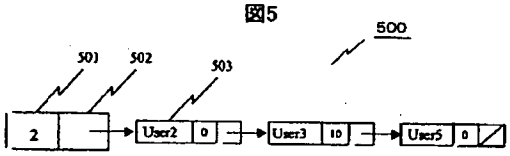

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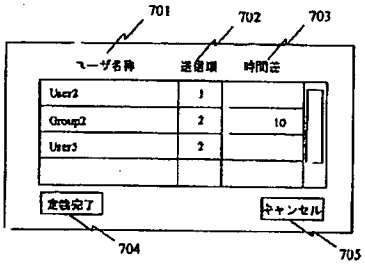

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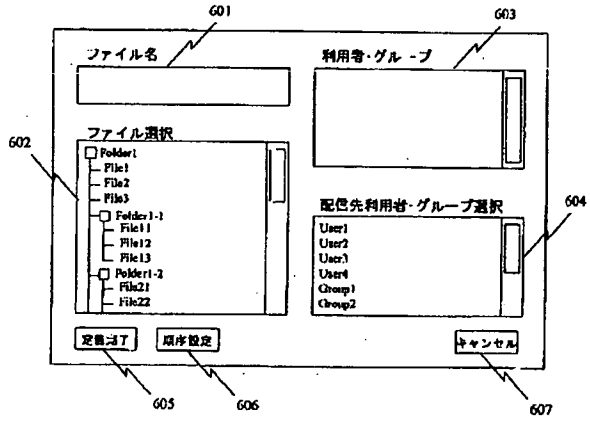

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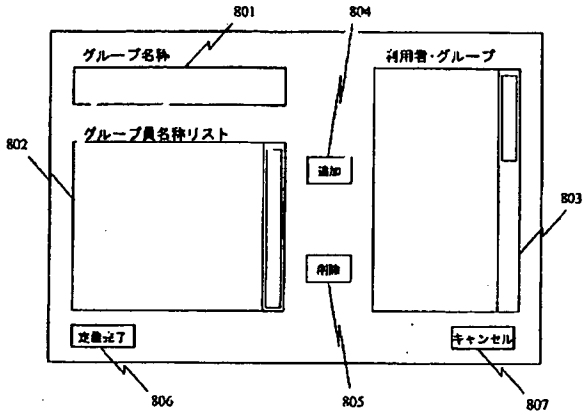
【図8】

図8



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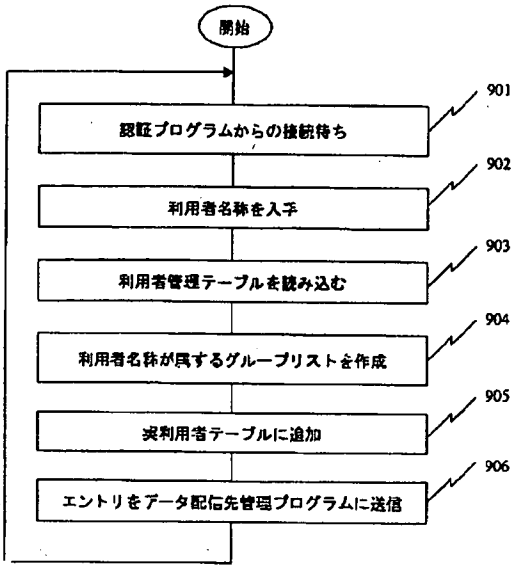

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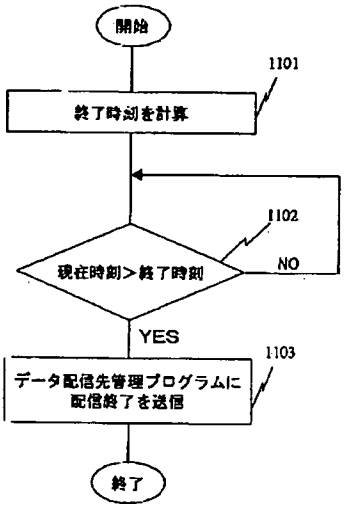

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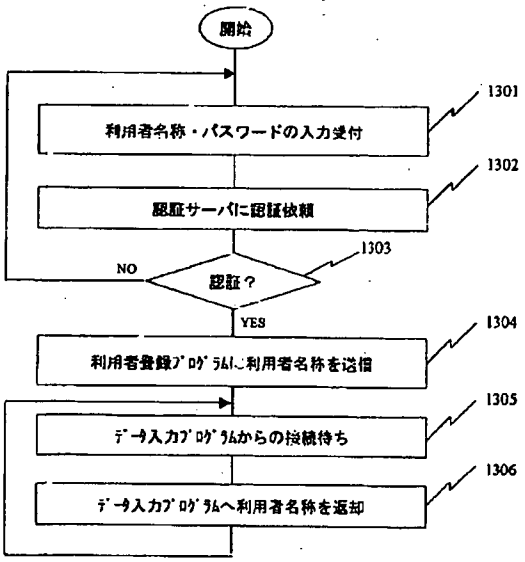

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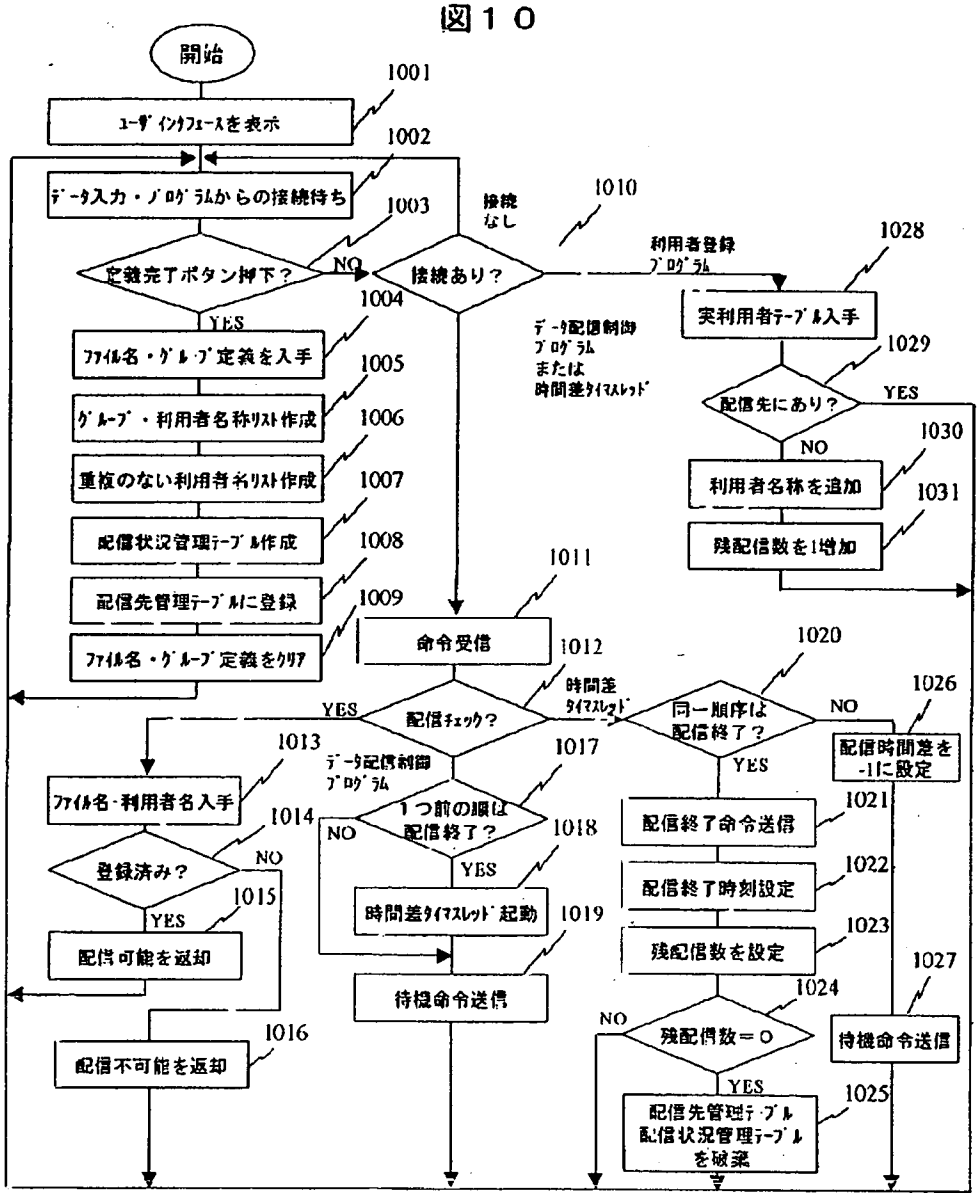
【図10】

図10



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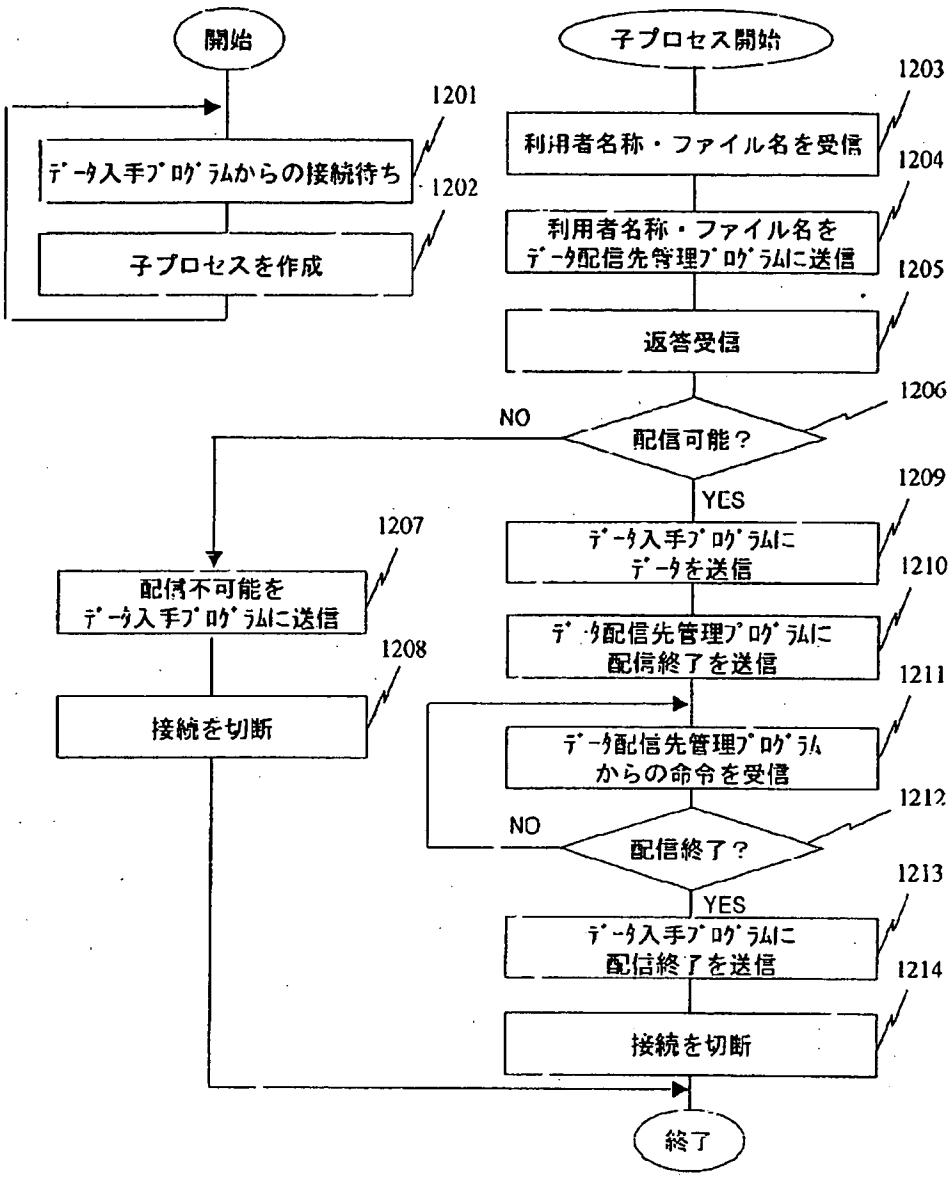
【図12】

図12



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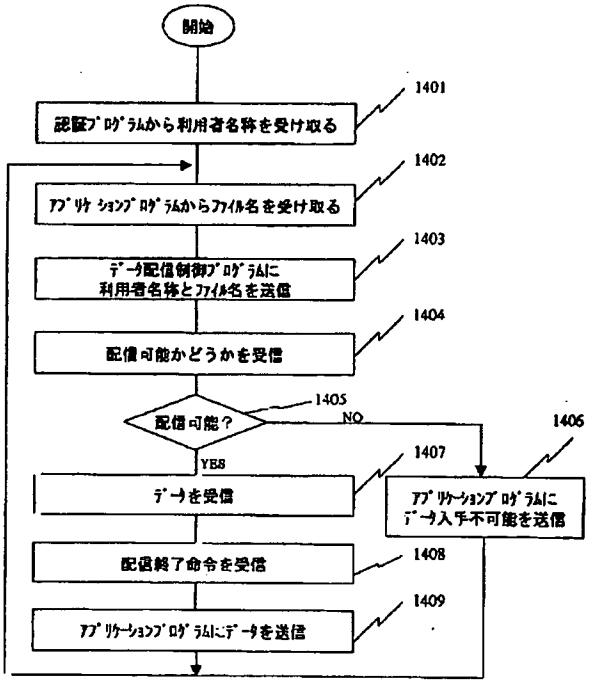
【図１４】

図１４



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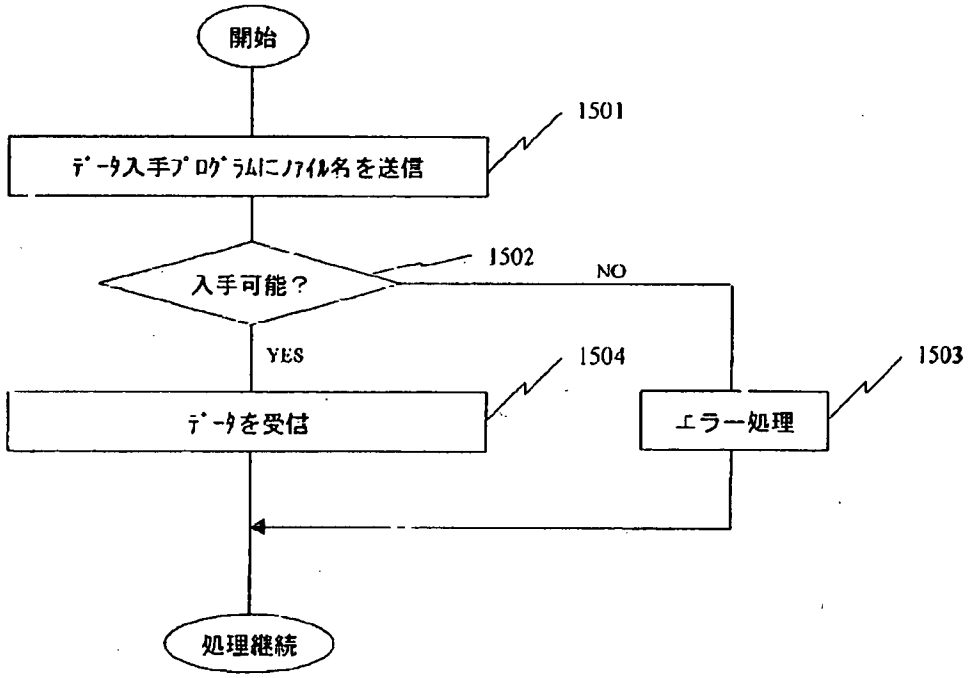
【図15】

図15



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12/58				

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KA01 KB06 KC15 KC52 KC58
LA09 LB04 LB14
5K030 GA15 HA06 HC01 HC13 KA01
KA02 LA19 LD06 LD13
5K033 BA13 CB13

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